

## **REMARKS**

Claims 1-25, 29-53, and 55-58 are now pending in the Application, of which claims 23-25 and 29-53 are currently withdrawn from consideration. Applicants have amended claims 1-22 and 55-58. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

### **REJECTION UNDER 35 U.S.C. § 103**

Claims 1-3, 13-15, 18-22 and 55-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al. (U.S. Pat. No. 5,624,769) in view of Gordon (U.S. Pat. No. 4,146,657). Claims 1-2 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gyoten et al. (U.S. Pat. No. 7,005,205) in view of Gordon. Claims 4 – 12 and 16 – 17 are rejected under 37 U.S.C. 103(a) as being unpatentable over Li et al. in view of Gordon as applied to claim 1 above, and further in view of Applicant's Admitted Prior Art (heretofore 'the AAPA'). These rejections are respectfully traversed.

Claims 1 and 55 are independent claims from which all other rejected claims depend. In response to the Examiner's concerns regarding Applicants' previously advanced arguments, Applicants have amended claims 1 and 55 to more distinctly and particularly claim what Applicants regard as the invention. Specifically, claims 1 and 55 now recite a *proton exchange membrane (PEM) fuel cell* comprising an electrically conductive contact element having an electrically conductive coating deposited on *and covering a major working surface* of the contact element, *the coating providing electrical conductivity* between the contact element and an electrode, wherein *a substantial portion of the coating is in direct contact with a reactant gas*.

In view of the amendments to the claims, Applicants respectfully submit that claims 1 and 55 are allowable over the combination of Gordon and either Li et al. or Gyoten et al. for the reasons set forth below in addition to those previously advanced. While Applicants provide additional bases herein for traversing the Examiner's rejection of the claims, Applicants respectfully request that the Examiner reconsider his obviousness rejection in view of the entire record, including prior arguments advanced by Applicants. (M.P.E.P. § 2145). To assist the Examiner with his review, Applicants set forth below a summary of Applicants' prior evidence and argument concerning nonobviousness with reference to Applicants' Amendment dated February 21, 2008.

The Examiner has asserted that it would be obvious to combine the teachings of Gordon with either Li et al. or Gyoten et al., however the Examiner has not specifically explained how one of skill in the art would apply Gordon to alter the structure disclosed by Li et al. or Gyoten et al. In light of this ambiguity, Applicants address the possibilities and submit that the combination of these references either does not disclose the fuel cell recited in amended claims 1 and 55 or is improper. While Applicants identify and address the possibilities, Applicants neither admit nor concede that it would be obvious to combine the references in the manner identified. On the contrary, Applicants maintain that it would not be obvious to one of ordinary skill in the art of fuel cells to combine the aforementioned references in the manner relied on by the Examiner.

As best understood by Applicants, Li et al. and Gyoten et al. respectively disclose contact elements comprising a topcoat of TiN and an electroconductive resin covering a barrier protective layer. These references further disclose that the topcoat layer includes discontinuities (Li et al.) or porosity (Gyoten et al.) that exposes the barrier

protective layer to a reactant gas used in the fuel cell. As a result of the discontinuities and porosity, Li et al. and Gyoten et al. disclose that metallic oxide deposits form on the barrier protective layer in discrete locations corresponding to the discontinuities or pinholes in the topcoat layers.

The Examiner appears to argue that Gordon may be applied to Li et al. and Gyoten et al. to replace one or more of the metallic oxide deposits, the barrier protective layer, and the topcoat layer (e.g., TiN and electroconductive resin). Regarding the first two possibilities, Applicants submit that applying Gordon to either Li et al. or Gyoten et al. to replace the metallic oxide deposits and/or the barrier protective layer disclosed by Li et al. and Gyoten et al. does not disclose all of the limitations of the coating recited in amended claims 1 and 55.

Merely replacing the sporadic deposits disclosed by Li et al. and Gyoten et al. with the composition disclosed by Gordon does not yield a coating which covers a major working surface of the contact element as recited in amended claims 1 and 55. (see also Amendment dated August 8, 2008 at 14-15).

Replacing the barrier protective layer disclosed by Li et al. and Gyoten et al. does not yield a coating which has a substantial portion of the coating in direct contact with a reactant gas as recited in amended claims 1 and 55. Li et al. and Gyoten et al. both disclose a topcoat layer disposed on the barrier protective layer and at most disclose that the barrier protective layer is exposed to the reactant gas through discontinuities or pinholes in the topcoat layer. Thus, any layer beneath the topcoat layer cannot include a substantial portion which is in direct contact with a reactant gas.

Regarding the third possibility, Applicants further submit that it is improper to rely on Gordon to replace the TiN layer in Li et al. or the resin layer in Gyoten et al. with a doped metal oxide because it was not obvious to do so. The Examiner has found much of Applicants' prior arguments of nonobviousness unpersuasive on the basis that the scope of Applicants' claims is not commensurate with Applicants' rebuttal evidence. Applicants have amended claims 1 and 55 in response to the Examiner's concern. Amended claims 1 and 55 now recite structure for a *PEM fuel cell* that includes additional structure and function for the recited coating. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw this basis for his rejection.

Additionally, in view of these amendments, Applicants respectfully request the Examiner to reconsider Applicants' evidence and rebuttal argument of record concerning the nonobviousness of Applicants' claimed invention. Applicants submit that these arguments clearly demonstrate that (1) Gordon is not reasonably pertinent to the particular problem addressed by Applicants (Amendment dated February 21, 2008 at 16-17); (2) significant differences exist between the devices to which Gordon applied its teachings and the fuel cells to which Applicants' invention is directed (*id.* at 15); (3) significant differences exist between the function of the metal oxide layer in the devices disclosed by Gordon and the conductive coating claimed by Applicants (*id.* at 17-18); (4) the results obtained by Applicants' use of a doped metal oxide composition in a fuel cell were not predictable given the caustic environment of a fuel cell and the general knowledge concerning metal oxide compositions (*id.* at 17-18); (5) Applicants' decision to experiment with doped tin oxide compositions was contrary to the conventional wisdom and the approach in the field as evidenced by Li et al. and Gyoten et al. (*id.* at

18-19); (6) Gordon neither taught, nor suggested important attainable features of the doped metal oxide composition necessary to coatings used in a fuel cell environment (*id.* at 16); and (7) a motivation to combine the aforementioned references cannot be found in the teachings of the cited references, the conventional wisdom of one skilled in the art, or the prevailing approach of the prior art (*id.* at 18-19).

In sum, Applicants have offered evidence and argument to rebut the Examiner's assertion of *prima facie* obviousness and amended the claims to ensure the scope of the claims is commensurate with Applicants' argument. Applicants have also provided additional argument demonstrating that there is no motivation to combine the teachings of Gordon with either Li et al. or Gyoten et al.

Based on the foregoing and Applicants' prior arguments of record, Applicants respectfully submit that the Examiner's *prima facie* case of obviousness has been properly rebutted and that claims 1 and 55 are now allowable over the combination of either Li et al. or Gyoten et al. with Gordon. The remaining rejected claims all depend, either directly or indirectly, from claim 1 or claim 55 and therefore should be allowable for at least the same reasons. Accordingly, reconsideration and withdrawal of the Examiner's rejections of claims 1-22 and 55-58 are respectfully requested.

## **CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office

Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

/David A. McClaughry/

Dated: June 12, 2008

By: \_\_\_\_\_

David A. McClaughry  
Reg. No. 37,885

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600

DAM/WSK